

**CLAIMS:**

1. Method of computing the transformation for transforming two images, in particular medical MR- or CT-images of a patient, one into the other comprising the steps of:
  - a) initialising a set of control points in both images,
  - b) determining the transformation parameters for said control points,
  - 5 c) performing a clustering of corresponding control points such that all control points of a cluster have substantially the same transformation parameters so as to obtain one or more clusters of control points,
  - d) determining the transformation parameters for further control points
    - d1) which do not belong to any cluster by an interpolation of the transformation parameters
    - 10 of neighbouring control points,
    - d2) which belong to one cluster by an interpolation of the transformation parameters of neighbouring control points of said one cluster, or
    - d3) which belong to more than one cluster by determining intermediate transformation parameters for each cluster based on an interpolation of the transformation parameters of
    - 15 neighbouring points of each of said clusters separately and by determining the transformation parameters from said intermediate transformation parameters.
2. Method as claimed in claim 1, wherein in step d3) the transformation parameters are determined by a combination and weighting of the intermediate  
20 transformation parameters.
3. Method as claimed in claim 2, wherein said weighting of the intermediate transformation parameters is based on weighting factors determined from the distances between the control point under consideration and the borderline of the cluster for which the  
25 intermediate transformation parameters have been determined.
4. Method as claimed in claim 1, wherein in step d3) the transformation parameters are determined by a selection of one of the intermediate transformation

parameters based on a similarity measure of the image information belonging to the control points under consideration.

5. Method as claimed in claim 1, wherein after said steps d2) and d3) said  
5 clustering step c) is repeated for optimisation of the clusters.

6. Method as claimed in claim 1, wherein said method is used during template propagation.

10 7. Method as claimed in claim 1, wherein said method is used for increasing the flexibility of deformable grids having a number of control points used for elastic registration of images.

8. Method as claimed in claim 1, further comprising the step of interactively  
15 assigning control points to clusters by a user.

9. Device for computing the transformation for transforming two images, in particular medical MR- or CT-images of a patient, one into the other comprising:

- a) means for initialising a set of control points in both images,
- 20 b) means for determining the transformation parameters for said control points,
- c) means for performing a clustering of corresponding control points such that all control points of a cluster have substantially the same transformation parameters so as to obtain one or more clusters of control points,
- d) means for determining the transformation parameters for further control points
- 25 d1) which do not belong to any cluster by an interpolation of the transformation parameters of neighbouring control points,
- d2) which belong to one cluster by an interpolation of the transformation parameters of neighbouring control points of said one cluster, or
- d3) which belong to more than one cluster by determining intermediate transformation
- 30 parameters for each cluster based on an interpolation of the transformation parameters of neighbouring points of each of said clusters separately and by determining the transformation parameters from said intermediate transformation parameters.

10. Computer program comprising computer program means for causing a computer to perform the steps of the method as claimed in claim 1 when said computer program is executed on a computer.

5 11. Data carrier for a computer program on which the computer program as claimed in claim 10 is stored.